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| 09/749,921      | 12/29/2000  | Robert J. O'Donnell  | 015290-465          | 6804             |

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EXAMINER

TRAN, BINH X

ART UNIT PAPER NUMBER

1765

DATE MAILED: 09/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/749,921

Applicant(s)

O'DONNELL ET AL.

Examiner

Binh X. Tran

Art Unit

1765

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 12 July 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 8, 10-18 and 24-36 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 29 is/are allowed.
- 6) ☒ Claim(s) 8, 10-18, 24-28 and 30-36 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Specification*

1. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: The examiner cannot find proper support for the limitation "other than a chamber liner" and/or "other than electrostatic chuck" in the specification. The examiner clearly recognizes that applicants disclose the component can be a chamber liner, a gas distribution plate, a gas ring, a pedestal, electrostatic chuck or focus ring in the specification. However, the limitation "other than a chamber liner" and "other than electrostatic chuck" is a negative limitation. This negative limitation implies infinite possibility for the component by excluding what the inventors did not invent rather than distinctly and particularly pointing out what they did invent

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 8, 10-12, 14-15, 17-18, 25-28, 33-34 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 8, the phrase "wherein the component is a component other than a chamber liner" (emphasis added) is indefinite. This negative limitation rendered the claim indefinite because it was an attempt to claim the invention by excluding what the

inventors did not invent rather than distinctly and particularly pointing out what they did invent. (See MPEP 2173.05(i)). The phrase "other than chamber liner" implies infinite possibility for the component for example: heater, cooler, nuts, bolt etc.

Claims 10-12, 14-15, 17-18, 26-28, 33-34 are indefinite because they directly or indirectly depend on indefinite claim 8.

In claim 25, "wherein the component is a component other than a chamber liner" (emphasis added) is indefinite for the same reason as discussed above.

In claim 33, "wherein the component is other than an electrostatic chuck" is indefinite. This negative limitation rendered the claim indefinite because it was an attempt to claim the invention by excluding what the inventors did not invent rather than distinctly and particularly pointing out what they did invent. (See MPEP 2173.05(i)).

#### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 8, 10, 13-18, 24, 26, 30, 33-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shamouilian et al. (US 5,606,485) in view of Clarke et al. (US 6,120,854).

Respect to claim 8, Shamouilian ('485) discloses a component (20) of semiconductor processing equipment, the component (20) comprising a substrate (28) having a surface and a polymer coating (22: 22a and/or 22b) on the surface of the substrate (28) and forming an outer surface of the component, the outer surface being resistant to plasma erosion and corrosion, wherein the component (20) is component other than a chamber liner (See col. 4 lines 23-67, col. 5 lines 32-41; col. 7 lines 10-20, Fig 1-3). Shamouilian ('485) also teaches the component comprises a substrate (24) having a surface a polymer coating (22a) on the surface of the substrate (24) and forming an outer surface of the component, the outer surface being resistant to plasma erosion and corrosion (See Fig 3, 5, col. 5 lines 32-41)

Shamouilian ('485) fails to disclose that the polymer material is liquid crystal polymer. Clarke discloses that liquid crystal polymer has superior property including extremely high flow, significant melt strength than regular polymer (col. 2 lines 35-45). It would have been obvious to one having ordinary skill in the art, at the time of invention, to modify Shamouilian ('485) in view of Clarke by using liquid crystal polymer because it is capable of withstanding high temperature due to significant melt strength property.

Respect to independent claim 13, Shamouilian fails to disclose the polymer is plasma sprayed liquid crystal polymer. However, Shamouilian ('485) clearly teaches to spray polymer material on the substrate (col. 7 lines 29-34). Clarke teaches to use plasma sprayed liquid crystal polymer because this technique is capable of forming a uniform surface (col. 4 lines 55-67). It would have been obvious to one having ordinary skill in the art, at the time of invention, to modify Shamouilian ('485) in view of Clarke by using plasma sprayed liquid crystal polymer because this technique is capable of forming a uniform surface.

Respect to claim 10, Clarke discloses the substrate (28) or substrate (24) comprises aluminum (col. 6 lines 1-2; col. 6 lines 50-52). Respect to claims 14, 24, Shamouilian ('485) discloses the component (20) is an electrostatic chuck. Respect to claim 15, Shamouilian ('485) discloses the polymer (22a and/or 22b) comprises a preformed sheet cover the surface of the substrate (28) (Fig 1). The liquid crystalline polymer limitation in claim 15 has been discussed above under Clarke's reference.

Respect to claim 16, Shamouilian ('485) discloses the component comprise a roughen surface that has been subjected to a surface roughen treatment and is in contact with the polymer applied on the surface (col. 6 lines 50-64). Respect to claim 17, Shamouilian ('485) discloses the polymer material (22) includes a filler (col. 5 lines 33-41). The liquid crystalline polymer limitation in claim 17 has been discussed above under Clarke's reference.

Respect to claim 18, Shamouilian ('485) discloses a plasma chamber (40) comprise at least one component (20) or component (24). Respect to claims 26 and 30,

Shamouilian ('485) discloses at least intermediate layer (22b or 24) between the surface of the substrate (28) and the coating (22a).

Respect to claims 33 and 35, Shamouilian ('485) discloses the component (24) is an electrode (read on "other than an electrostatic chuck"). Respect to claims 34 and 36, Shamouilian discloses the component consist essentially of a substrate a sprayed polymer. The limitation regarding sprayed liquid crystalline polymer was discussed above under Clarke reference.

7a. Claims 11, 27-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shamouilian ('485) in view of Clarke as applied to claim 8 above, and further in view of Shamouilian (US 2002/0036881).

7b. Claims 31-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shamouilian ('485) in view of Clarke as applied to claim 13 above, and further in view of Shamouilian (US 2002/0036881).

Respect to claims 11, 27-28, 31-32 Shamouilian ('485) fails to disclose that the substrate comprises alumina (claim 11), or refractory metal (claims 27, 31) or ceramic material selected from the group consisting of silicon carbide, silicon nitride, boron carbide, and boron nitride (claims 28, 32). However, Shamouilian ('485) clearly discloses the base of the chuck (i.e. the substrate) comprise aluminum (col. 6 lines 51-56). In a semiconductor apparatus, Shamouilian ('881) discloses the chuck have a base comprises either aluminum, or aluminum oxide (aka alumina), refractory metal (i.e. titanium, tungsten), or ceramic material selected from the group consisting of silicon carbide, silicon nitride, boron carbide, and boron nitride (page 3 paragraphs 0037). It

would have been obvious to one having ordinary skill in the art, at the time of invention, to modify Shamouilian ('485) and Clarke in view of Shamouilian ('881) by using alumina, refractory metal or ceramic material selected from the group consisting of silicon carbide, silicon nitride, boron carbide, and boron nitride because equivalent and substitution of one for the other would produce an expected result.

8. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shamouilian (US 5,606,485) in view of Clarke as applied to claim 10 above, and further in view of Whitlock et al. (US 4,736,087).

Respect to claim 12, Shamouilian fails to disclose the component includes an anodized surface. However, Shamouilian clearly discloses the component is a chuck comprises aluminum. In a semiconductor apparatus, Whitlock teaches to use either aluminum or anodized aluminum for the chuck (col. 3 lines 68 to col. 4 line 3). It would have been obvious to one having ordinary skill in the art, at the time of invention, to modify Shamouilian ('485) and Clarke in view of Whitlock by using anodized aluminum because equivalent and substitution of one for the other would produce an expected result.

***Allowable Subject Matter***

9. Claim 25 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.

10. Claim 29 are allowed.

11. The following is a statement of reasons for the indication of allowable subject matter: The reason for allowance was discussed in previous office action.



***Response to Arguments***

12. Applicant's arguments filed 7-12-2005 have been fully considered but they are not persuasive.

Applicants argues that in column 5 lines 51-55, Shamouilian '485 refer to application 08/052,018 for the teaching a "preferred protective coating". According to applicants a continuation of '018 application issued to US 5,560,780 to Wu teaches to use inorganic aluminum compound as a protective coating. This argument is not persuasive. Shamouilian '485 clearly teaches the protective coating (22) can be either inorganic compound or polymeric compound (col. 4 lines 63 to col. 5 line 22). For a 35 USC 103 rejections, the examiner only need to show at least one embodiment in the prior read on the claimed invention. The examiner does not need to show all of the embodiments in the prior read on the claimed invention. Thus, the examiner still consider Shamouilian '485 as a proper prior art.

In response to applicant's argument that Clarke is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, Clarke clearly teaches to use a liquid crystalline polymer coating on a substrate to protect the substrate from corrosion (col. 4 lines 55-67). Clarke further discloses the superior property of liquid crystalline polymer such as withstanding high temperature. The primary reference Shamouilian teaches to coat the substrate with a polymer

material (22) to protect the substrate from corrosion. Therefore, the examiner still maintains that it is obvious to combine Shamouilian '485 in view of Clarke in order to protect the substrate from corrosion and able to withstand at high temperature.

The applicants further provide the decision of Patent Appeals Interference in US 09/749,923 as the basis for the motivation to combines the reference teachings. This argument is not persuasive. The Board of Patents Appeals and Interference reverse the rejection because the examiner in 09/749,923 concluded that "it would have been within the scope of one of ordinary skill in the art to combine the teaching of applicants admitted prior art and Fagan to achieve further corrosion resistance" (page 4, 4<sup>th</sup> paragraph). The examiner in the current application does not use the admitted prior art as a reason for combining the reference. The examiner clearly shows that the motivation for combining the references is disclosed in the prior arts cited by the examiner.

### ***Conclusion***

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Binh X. Tran whose telephone number is (571) 272-1469. The examiner can normally be reached on Monday-Thursday and every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on (571) 272-1465. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1765

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Binh Tran

Binh X. Tran